SECTION 432

LUMINAIRES

432.1 GENERAL. This work shall consist of furnishing and installing luminaires on standards, bridge structures, or sign supports in compliance with the specifications, details shown on the plans, and Standard Drawings, at the locations shown on the plans, or as established by the ENGINEER.

432.2 REFERENCES.

431.2.1 American National Standards Institute (ANSI) Standards, Latest Edition

RP8 Roadway Lighting (IES)

432.3 MATERIALS.

432.3.1 STREET LIGHT LUMINAIRE.

432.3.1.1 Street light luminaires shall be horizontal-burning cobra type with a 2-inch slipfitter on the house side for mounting on a Type V standard. The lamp type (metal halide, or high pressure sodium), lamp wattage, and line voltage shall be as specified on the plans or in the special provisions. The required ballasts shall be an integral part of the luminaire and shall be pre-wired to the lamp socket (may use quick disconnect plugs), requiring only connection to the power supply terminal (screw type).

432.3.1.2 Unless otherwise specified in the plans, all fixtures shall have full cutoff optics and shall have an ANSI/IES M-C-II distribution. Photometric data shall be submitted to the ENGINEER for approval.

432.3.1.3 Glassware shall be of the refractor type (unless otherwise specified in plans as a cutoff type) with inner and outer prisms for horizontal light control. Refractors shall be Borosilicate glass.

432.3.1.4 The refractor shall be mounted in a door-frame assembly which shall be hinged to the luminaire at the house side and fastened at the street side by means of an automatic latch.

432.3.1.5 The reflector shall be anodized aluminum, ALZAK, ALGLAS or approved equal treatment. The socket shall be of a high grade porcelain with both axial and vertical adjustment.

431.3.1.6 The reflector and lamp socket shall be secured to the upper housing. The refractor and doorframe assembly shall be forced upward at the street side by spring pressure against a gasket seat when in the closed and latched position.

432.3.1.7 The ballast shall be an easily removable power pack connected by a quick disconnect plug. The ballast shall be accessed through a separate rear door not disturbing the sealed optical system, or through a single door, also accessing the optical system, when the ballast is mounted to a tray that is removable without the use of tools.

431.3.1.8 The slipfitter shall provide positive clamping on 1-1/4 or 2" pipe bracket. It shall also permit leveling of the luminaire on the horizontal $\pm$ 3 degrees.

431.3.1.9 Luminaires with full cutoff distributions shall utilize a shielded optical system that incorporates a specially designed reflector and a heat and impact resistant flatglass lens. The luminaire shall allow no light above 90°.

431.3.1.10 An individual photocell controller on the top of the housing, mounted inside or outside, shall be provided when specified on the plans or special provisions.

431.3.1.11 All gaskets shall be composed of a material capable of withstanding the temperature involved and shall be securely held in place. The housing and refractor ring shall be of die-cast aluminum. The latch and exposed hinge parts shall be manufactured from noncorrosive material.

431.3.1.12 When mounted on Bridge Deck, the pole shall be mounted on a vibration dampening pad and the fixture shall have a lamp stabilizer to reduce the potential for damage to the fixtures from vibration. The fixture shall be certified to withstand a 3G vibration test.

432.3.2 AREA LUMINAIRE: Area luminaires shall be decorative type luminaires mounted on Type IV standards. The general appearance, color, and electrical requirements shall be as detailed in the special provisions and/or plans. Unless otherwise specified, the luminaire shall provide a symmetrical light distribution.

432.3.3 UNDERPASS LUMINAIRE

432.3.3.1 Underpass luminaires shall be designed to mount directly on a wall with surface wiring or over a recessed outlet box, in conformance with details on the plans. The luminaire may be mounted by a flush outlet box stud or by three mounting bolts. Underpass luminaires shall be weatherproof, self-contained units with an integral

ballast. The luminaire shall consist of a die cast aluminum base housing, Borosilicate Prismatic Glass Refractor, hinged lens assembly and have a quality gasket between the door and housing.

432.3.3.2 The reflector shall be of anodized aluminum, ALZAK, ALGLAS, or approved equal. The aluminum reflector and socket shall be mounted rigidly to the housing.

432.3.3.3 Lamps shall be 150-watt high pressure sodium, ANSI Code S55 unless otherwise specified on the plans or in the special provisions.

432.3.3.4 Vandal protection shall be provided by either a cast aluminum grid guard or a Lexan shield over the refractor. The latches shall be tamper resistant.

432.3.3.5 The luminaire shall light an area one mounting height on either side of the fixture and two mounting heights in front.

432.3.4 BALLASTS.

432.3.4.1 GENERAL: Ballasts for high intensity discharge lamps shall be for the primary current and types of lamps specified on the plans and/or in the special provisions. Unless otherwise specified, the ballast shall be an integral part of the luminaire. All ballasts shall be designed to meet ANSI Specifications.

432.3.4.2.1 HIGH PRESSURE SODIUM BALLASTS

432.3.4.2.1.1 Ballasts for 250W and 400W high pressure sodium lamps shall have isolated primary and secondary lamp circuit windings. They shall have a Transient Impulse Level of 10 KV, voltage input range of + 10% and ballast loss of no more than 20%.
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432.3.4.2.1.2 If the drawings specify a integrated circuit design ballast, it to shall have isolated primary and secondary lamp circuit windings and transient impulse level of 10 KV. The voltage input range shall be + 13% and the lamp wattage regulation shall be 2%.
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432.3.5 LAMPS

432.3.5.1 H.I.D. (high intensity discharge) lamps for luminaires shall conform to the following requirements:

HPS/ Watage	Description (ANSI)	Min Inital Lumans	Min Rated Life (hrs)	Use
150	Clear (S55)	16,000	24,000	Underpass
250	Clear (S50)	27,500	24,000	Roadway
400	Clear (S51)	50,000	24,000	Roadway

432.3.5.2 Based on 10 hours per start. When less than 24,000 hrs., it is median value of life expectancy. When 24,000 +, 67% of lamps shall be expected to be burning at 24,000 hrs.

432.4 CONSTRUCTION REQUIREMENTS.

432.4.1 The CONTRACTOR shall properly align and level all luminaires in accordance with the manufacturer's and design requirements.

432.4.2 The installation of luminaires shall include two single conductors, #10 or as specified on the plans, to the standard pole base or nearest splice point into main distribution feed.

432.4.2.1 The installation of underpass luminaires shall include all conduit and wiring to the nearest pull box (splice point into the main distribution feed) and all necessary mounting devices.

432.4.2.2 The above specified wiring, conduit, mounting hardware and switches shall be considered part of the luminaire installation and no separate payment will be made therefor.

432.4 MEASUREMENT AND PAYMENT.

432.4.1 Luminaires will be measured by the unit, complete in place.

432.4.2 The accepted quantities of luminaires will be paid for at the contract unit price per unit of measurement for each of the pay items as shown on the bid proposal